Pearson Level 3 Alternative Academic Qualification BTEC National in Computing (Certificate / Extended Certificate)

Unit 1: Programming Fundamentals

Sample Assessment Materials

First teaching September 2025 / 2026
First certification from 2026 / 2027
Issue 2

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Summary of changes for Pearson Level 3 Alternative Academic Qualification BTEC National in Applied Science (Certificate/Extended Certificate) Sample Assessment Material Issue 2

Summary of changes made between previous issue and this issue	Page number
Question paper Q2(b) – binary values updated.	6
Question paper Q2(e) – question stem updated.	8
Mark scheme – Updated for Q2(b)	40
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Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number

Learner Registration Number

Pearson Level 3 Alternative Academic Qualification BTEC National in Computing (Certificate/Extended Certificate)

Sample assessment material

Time 2 hours 30 minutes

Paper reference XXXXX/XX

Computing

UNIT 1: Programming Fundamentals

You must have:
Information Booklet (enclosed)

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and learner registration number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- You are not permitted to use a calculator.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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Pearson

Answer ALL questions. Write your answers in the spaces provided.

Please refer to the Information Booklet in order to answer Question 1.

1 Hasc Currency Convertors buys and sells different currencies. It is having software developed which will be used by the staff to calculate the costs of converting money between currencies for customers.

The program requirements and an early version of the code is shown in **Figure 1** in the Information Booklet. The code is not complete.

(a) State the data type of the data held in these variables:

- amountGBP
- charge
- currency

(3)

amountGBP

charge

currency

(b) Total currency values must be output to 2 decimal places.

Explain **one** way the program could make use of built-in numerical functions provided by standard programming libraries to ensure values have only 2 decimal places.

(2)

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DO NOT WRITE IN THIS AREA

(c) The code on lines 13–18 in **Figure 1** could be improved.

Explain the iteration structure that the programmer should use to ensure that the code does not continue until a valid currency is entered.

(2)

(d) Hasc Currency Convertors is introducing a loyalty scheme. The scheme will allow customers to earn points with each transaction. The points can be exchanged for prizes and special offers.

The flowchart in **Figure 2** in the Information Booklet shows how the points are calculated.

Calculate the value of ptsEarned for each of the scenarios shown in the table.

(4)

Scenario Number	Scenario	ptsEarned
1	eliteMember = FALSE cost = 1000	
2	eliteMember = TRUE cost = 300	
3	eliteMember = FALSE cost = 950	
4	eliteMember =TRUE cost = 1250	

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DO NOT WRITE IN THIS AREA

(e) Hasc Currency Convertors wants to expand the program so that it can convert between more currencies.

Describe how user-defined functions could be implemented to add this functionality.

(3)

(f) The final version of the code will include conversion between GBP and ten other currencies.

It will also allow the user to include multiple conversions in a single transaction.

Discuss how the programmer could make use of string handling functions to meet the requirements of the program.

You should support your discussion with examples linked to the scenario.

(6)

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(Total for Question 1 = 20 marks)

Please refer to the Information Booklet in order to answer Question 2.

2 Jay is developing a fantasy adventure computer game.

(a) Jay has planned some of the algorithms for the game using pseudocode.

State **one** benefit of using pseudocode to express an algorithm.

(1)

.....

.....

.....

(b) The game uses different "stats" for characters and objects.

In the game a player can increase the strength stat of their character by consuming a potion.

To calculate the player's final character strength after they have consumed a potion requires two stats:

- character_strength
- potion_effect_multiplier

Calculate the final character strength by multiplying these two binary values:

- character_strength = 0 0 1 0 1 1 0 1
- potion_effect_multiplier = 0 0 0 0 0 1 0 1

You must show your working.

(4)

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(c) At the start of the game the player must create a name for their character.

Explain **one** validation check technique that could be used on the variable *character_name*.

(2)

Jay has created a list data structure to hold items found in the game.

Here is the data structure with some items already stored in it:

inventory = ["Potion", "Food", "Axe", "Potion", "Shield"]

(d) The player has found the item "Key".

Write a single line of code that will add the item to the end of the list.

(2)

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(e) The game must keep track of the most recently found item held in the data structure *inventory*.

Write a line of code that will initialise the variable *last_found* with the last item in the data structure.

The code must work with a list of any size.

(2)

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(f) Jay would like to introduce an extra feature to the game that keeps track of the five highest scores achieved.

Figure 3 in the Information Booklet lists the requirements for the high-score feature.

Develop a section of Python code that will meet the requirements given in **Figure 3**.

You have been provided with code that would provide data for *currScore* and *highScores*.

(9)

```
1  currScore = getCurrScore() #gets the player's current score and returns it as an integer
2
3  highScores = getHighScores() #gets the current high scores and returns them in a data structure
```

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(Total for Question 2 = 20 marks)

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Please refer to the Information Booklet in order to answer Question 3.

3 Zawadi owns a company that sells gift bags for children's parties.

Zawadi requires a computer program that will help customers choose and pay for gift bags.

Customers can select the contents of the bag from a list of options or can have the contents chosen randomly.

Figure 4 in the Information Booklet shows some code that has been written to randomly choose four gift items that will be included in a bag.

(a) Give **two** reasons why the range used in the random number function on line 8 is (0,5).

(2)

1 .....

.....

2 .....

.....

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The programmer has run the program and generated this output:

["Notebook", "Yo-yo", "Whistle", "Yo-yo"]

They want to change the code so that the bag does not contain a repeated item.

This line of code will be added at line 11 on **Figure 4**. The code will remove a gift item from the list when it is chosen:

items.remove(choice)

(b) Explain **one** reason why this change to the program may cause an error.

(2)

(c) Explain **one** way that the program could be improved to prevent issues caused by removing data from the data structure *items*.

(2)

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(d) Explain **two** ways that the code in **Figure 4** could be made easier to maintain.

(4)

1 .....

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.....

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2 .....

.....

.....

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(e) Customers can purchase the gift bags from Zawadi's website.

Figure 5 in the Information Booklet shows the process that is used when checking and authorising the payment.

Draw a flowchart to represent an algorithm for the process.

(6)

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(f) **Figure 6** in the Information Booklet shows some of the requirements for the program Zawadi requires.

The programmer plans on making use of open-source code as part of the development.

Assess the extent to which the use of open-source code will meet the given program requirements.

You should support your assessment with examples linked to the scenario.

(9)

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(Total for Question 3 = 25 marks)

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Please refer to the Information Booklet in order to answer Question 4.

4 Laura is developing a suite of computer programs for a local martial arts club.

Figure 7 in the Information Booklet shows the requirements for the suite of programs.

(a) Laura must apply the Web Content Accessibility Guidelines (WCAG) to the suite of programs.

Explain **two** ways that Laura could make sure that information and user interface components are perceivable.

(4)

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(b) User data must be kept secure.

Explain **one** way that Laura could make use of secure coding practices to mitigate potential security issues.

(2)

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The martial arts club has different types of memberships.

The table shows the criteria for different membership types:

Age (years)	Membership type
Under 5	No membership
5 to 17	Junior
18 and above	Senior

Laura has produced this section of code which checks if a member meets the 'Junior Member' criteria:

```
if age >= 5 AND age <=17:
    memberType = "Junior"
```

(c) Describe how the section of code could be fully tested to ensure that it will meet requirements.

(4)

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(d) Explain **one** reason why the code that checks the age for the Junior member criteria uses the Boolean operator AND instead of OR.

(3)

(e) The suite of programs will provide a facility to allow instructors to manage information about members that take part in competitions.

Figure 8 in the Information Booklet shows the requirements for the code.

Figure 9 in the Information Booklet shows some code Laura has developed.

Evaluate the extent to which the code in **Figure 9** meets the requirements given in **Figure 8**.

Your evaluation should include:

- examples linked to the scenario to support any points you make
- a supported conclusion.

(12)

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(Total for Question 4 = 25 marks)

Pearson Level 3 Alternative Academic Qualification BTEC National in Computing (Certificate/Extended Certificate)

Sample assessment material

Time 2 hours 30 minutes

Paper reference XXXXX/XX

Computing

UNIT 1: Programming Fundamentals

Information Booklet

Do not return this Booklet with the question paper.

Instructions

- Use this information booklet to answer questions.
- Do not write answers on the information booklet.

Information

- This information booklet is not submitted with your answers.

Advice

- Read this information booklet carefully before answering the questions.

Turn over ▶

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SECTION 1

The information in this section should be used to answer Question 1.

Currency conversion program requirements

The program must allow the user to enter:

- the amount of money in pounds sterling GBP they wish to convert to a different currency
- the currency that they want in exchange for their GBP.

The program must then:

- retrieve the exchange rate of the requested currency (e.g. 1GBP is equal to 1.1325 Euros)
- calculate and output the value of requested currency they will receive based on how much GBP they wish to convert
- calculate and output the total cost of the transaction in GBP including the initial amount and the amount the company charges for the service.

Figure 1 shows an early version of some code that has been written for Hasc Currency Convertors.

```
1  euroRate = 1.1325
2
3  UsDollarRate = 1.2425
4
5  amountGBP = int(input("Enter the value in pounds sterling (GBP) that you wish to convert"))
6
7  charge = amountGBP * 0.0155
8
9  cost = amountGBP + charge
10
11 currency = input("Please enter the currency you wish to purchase (EUR / USD): ")
12
13 if currency == "USD":
14     totalCurrency = amountGBP * UsDollarRate
15 elif currency == "EUR":
16     totalCurrency = amountGBP * euroRate
17 else:
18     print("Sorry you have not entered a valid choice")
19
20 print("{} GBP is equal to {} in {}".format(amountGBP, totalCurrency, currency))
21 print("Including charges this transacion will cost £{}".format(cost))
```

Figure 1

Figure 2 shows the logic for how loyalty scheme points are earned by customers.

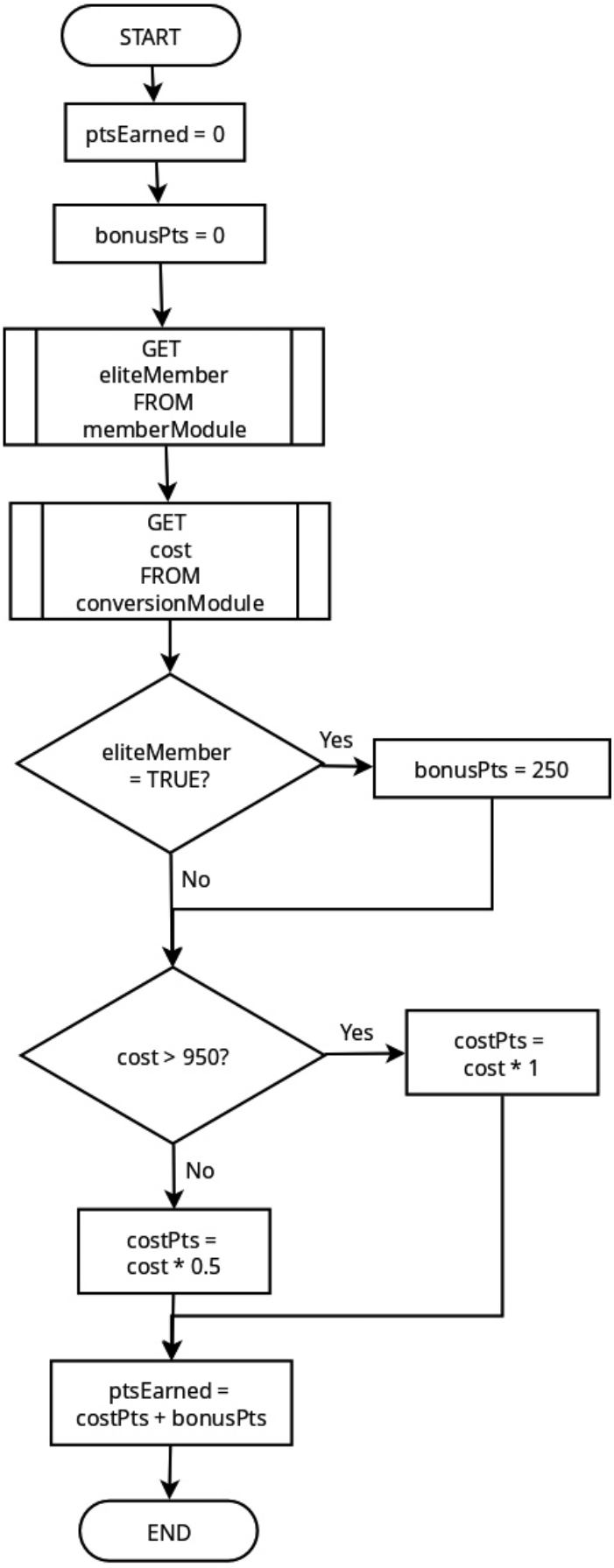


Figure 2

SECTION 2

The information in this section should be used to answer Question 2.

Figure 3 lists the requirements for the high-score feature.

When the game ends, the player's score and the current five highest scores will be passed to the high-score feature.

The player's score is stored in a variable called currScore.

The high scores are stored in a runtime data structure called highScores.

The code to provide data for currScore and highScores has already been written.

The high-score feature must:

- determine if the player's score should be stored as a high score
- if the player's score is a high score it should be stored and the lowest score deleted
- inform the player if they have achieved a high score or not
- output the high scores in ranked order (highest first).

Figure 3

SECTION 3

The information in this section should be used to answer Question 3.

Figure 4 shows some code that has been written to randomly choose four gift items that will be included in a party bag.

```
1  import random
2
3  giftItems = ["Yo-yo", "Ball", "Balloon", "Pen", "Notebook", "Whistle"]
4
5  def make_bag (items):
6      bag = []
7      for i in range(4):
8          random_selection = random.randint(0,5)
9          choice = items[random_selection]
10         bag.insert(i, choice)
11
12     return bag
13
14 print(make_bag(giftItems))
```

Figure 4

Figure 5 shows the process that is used when checking and authorising the payment for an online purchase with a debit card for an existing customer.

The customer enters the payment details by:

- selecting a debit card previously stored in their account
- entering a 3-digit Card Verification Code (CVC).

The website checks that the CVC entered matches the selected payment card.

Once a valid CVC is entered, the website sends a request for payment to the customer's bank.

The bank checks whether there are enough funds in the bank account to make the purchase.

The bank will decline the payment if there are not enough funds.

If there are enough funds, an alert is sent to the customer's banking app to confirm they are making the purchase.

If the bank declines the payment or the customer does not authorise the payment, the purchase is cancelled.

If the customer authorises, the payment is made and a receipt for the transaction is sent to the customer's email address.

Figure 5

Figure 6 shows some of the requirements for Zawadi's program.

The program must be:

- robust and able to handle a range of user errors
- secure and protect user data
- easily maintainable
- cost effective.

Figure 6

SECTION 4

The information in this section should be used to answer Question 4.

Figure 7 shows the requirements for a suite of computer programs for a local martial arts club.

The suite of programs must:

- allow the instructors to manage:
  - club members' details
  - the club's finances
  - competition entries
  - instructor training rotas.
- allow current and potential members to:
  - contact the club's instructors
  - pay for individual classes or memberships.
- be accessible for a range of different users.

Figure 7

Figure 8 shows the requirements for a section of code used to manage information about members who take part in competitions.

The code must allow a user to enter:

- member's name
- current weight in kilograms (kg)
- competition weight category
- number of competitions entered that month.

The program should then output information that shows:

- the member's name
- the total cost of competitions (with and without any discount)
- how their current weight compares to their competition weight category.

You should use this information when developing your program:

Cost	
Cost per competition	25.00
A discount of 15% is applied if three or more competitions are entered in a month	
Weight categories	
Categories	**Upper weight limit (kg)**
Super-Heavyweight	Unlimited (Over 100)
Heavyweight	100
Light-Heavyweight	90
Middleweight	81
Lightweight	73
Flyweight	66

Additional information

All prices and costs should be displayed as currency to 2 decimal places.

The program should be easy to use and capable of handling user error.

After outputting information for a member, the user should be given the option to enter the details for another member. The program should run until the user chooses to exit.

Figure 8

Figure 9 shows a section of code used Laura has developed.

```
COMP_COST = 25.00

WEIGHTS = (66, 73, 81, 90, 100, 101)

print("#####################################")
print("####### Competition Calculator ########")
print("\n")
print(" Welcome to the competition calculator")

name = input("Please enter member's name: ")

comps = int(input("Please enter the number of competitions entered: "))
if comps > 3:
    cost = (comps * COMP_COST) * 0.85
else:
    cost = comps * COMP_COST


currWeight = int(input("Please enter the member's current weight: "))

print ("What weight category does the memeber compete in?")
print("1. Super-Heavyweight (over 100 KG)")
print("2. Heavyweight (100 KG)")
print("3. Light-Heavyweight (90 KG)")
print("4. Middleweight (81 KG)")
print("5. Lightweight (73 KG)")
print("6. Flyweight (66 KG)")

weightSelection = int(input("Please select a weight category: "))

match weightSelection:
    case 1:
        category = "Super-Heavyweight"
    case 2:
         category = "Heavyweight"
    case 3:
        category = "Light-Heavyweight"
    case 4:
         category = "Middleweight"
    case 5:
        category = "Lightweight"
    case 6:
         category = "Flyweight"

compWeightKG = WEIGHTS[weightSelection - 1]

weightDiff =  currWeight - compWeightKG

print(name)
print(comps)
print(currWeight)
print(category)

print(compWeightKG)
if weightDiff > 0:
    print("You are currently not at your competition weight. There is a difference of +{}KGs".format(weightDiff))
else:
    print("You have made competition weight. There is a diffence of {}KGs between your weight and the category
    limit.".format(weightDiff))

print("The total cost for competitions is: £{}".format(cost))
```

Figure 9

Unit 1: Programming Fundamentals

General marking guidance

- All students must receive the same treatment. Examiners must mark the first student in exactly the same way as they mark the last.
- Mark grids should be applied positively. Students must be rewarded for what they have shown they can do rather than be penalised for omissions.
- Examiners should mark according to the mark grid, not according to their perception of where the grade boundaries may lie.
- All marks on the mark grid should be used appropriately.
- All the marks on the mark grid are designed to be awarded. Examiners should always award full marks if deserved. Examiners should also be prepared to award zero marks, if the student's response is not rewardable according to the mark grid.
- Where judgement is required, a mark grid will provide the principles by which marks will be awarded.
- When examiners are in doubt regarding the application of the mark grid to a student's response, a senior examiner should be consulted.

Specific marking guidance

The mark grids have been designed to assess students' work holistically.

Rows in the grids identify the assessment focus/outcome being targeted. When using a mark grid, the 'best fit' approach should be used.

- Examiners should first make a holistic judgement on which band most closely matches the student's response and place it within that band. Students will be placed in the band that best describes their answer.
- The mark awarded within the band will be decided based on the quality of the answer in response to the assessment focus/outcome and will be modified according to how securely all bullet points are displayed at that band.

- Marks will be awarded towards the top or bottom of that band depending on how they have evidenced each of the descriptor bullet points.

Question Number	Answer	Mark
1a	Award one mark for each of the following up to a maximum of **three** marks. • amountGBP – Integer (1) • charge – float/real (1) • currency – string (1)	**(3)**

Question Number	Answer	Mark
1b	Award **one** mark for identification of a function and **one** mark for an appropriate linked expansion, up to a maximum of **two** marks. • Use round (1) to return the nearest (2.d.p) value (1) • Use trunc/truncation (1) to remove the last 2 digits in the number (1)	**(2)**

Question Number	Answer	Mark
1c	Award **one** mark for identification of an iteration structure and **one** mark for an appropriate linked expansion, up to a maximum of **two** marks. Use a while loop (1) so the section of code repeats until either EUR or USD are entered (1)	**(2)**

<table>
<tr><th>Question Number</th><th>Answer</th><th>Mark</th></tr>
<tr><td>1d</td><td>Award one mark for each correct output, up to a maximum of four marks.

<table>
<tr><th>Scenario Number</th><th>Scenario</th><th>ptsEarned</th></tr>
<tr><td>1</td><td>eliteMember = FALSE
cost = 1000</td><td>1000</td></tr>
<tr><td>2</td><td>eliteMember = TRUE
cost = 300</td><td>400</td></tr>
<tr><td>3</td><td>eliteMember = FALSE
cost = 950</td><td>475</td></tr>
<tr><td>4</td><td>eliteMember =TRUE
cost = 1250</td><td>1500</td></tr>
</table></td><td>(4)</td></tr>
</table>

Question Number	Answer	Mark
1e	Award **one** mark for each appropriate point in a linked description up to a maximum of **three** marks. • Define a function that returns the *exhangeRate* for a selected currency (1) • then pass the *amountGBP* variable and *exchangeRate* value as arguments (1) • to another function that will return the *totalCurrency* value (1) **Additional guidance** Accept descriptions of an alternative solution that makes use of functions.	**(3)**

Question Number	Indicative content
1f	A discussion of how programmer could make use of string handling functions to meet the requirements of the program. Responses will be credited according to the student's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Responses may cover some or all indicative content, but students should be rewarded for other relevant responses. **Discussion topic areas / string handling functions that may be covered:** • Concatenating and splitting strings and lists • Formatting inputs and outputs • Length • Position • String conversion: o integer/float to string o string to integer/float. **Possible links to the scenario:** The student should make links to the given scenario. This may include (but is not limited to): • Handling user input for example: o Converting text input to usable numbers (e.g. int(), float()) o Ensuring input of currencies is consistently capitalised so it matches what is stored • Formatting the output/receipt to concatenate values stored in variables with output messages • Ensuring the length of a user input is appropriate, e.g. the three-letter code for a currency.

Mark scheme (award up to 6 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes.		
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	• Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2) • Demonstrates a basic analysis of the situation by superficially breaking down the different aspects into relevant component parts (AO3)
Level 2	3-4	• Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2) • Demonstrates a good analysis of the situation by breaking down the different aspects into relevant component parts (AO3)
Level 3	5-6	• Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2) • Demonstrates a thorough analysis of the situation by comprehensively breaking down the different aspects into relevant component parts (AO3)

Total Marks Question 1 = 20

Question Number	Answer	Mark
2a	Award **one** mark for any of the following: • Don't have to follow specific syntax rules / language agnostic (1) • Similar structures to higher level programming languages (1) • Can be easily understood by other developers/programmers (1) • Helps to see how code can be grouped / helps identify where code can be reused/refactored (1) • Fewer steps (than flowcharts) from design to implementation (1) Accept any other appropriate responses.	**(1)**

Question Number	Answer	Mark
2b	Award **four** marks for the correct answer. If the answer is incorrect, award **one** mark for each correct row of calculation. 0 0 1 0 1 1 0 1 X 0 0 0 0 0 1 0 1 - - - - - - - - 0 0 1 0 1 1 0 1 **(1)** 0 0 0 0 0 0 0 **(1)** + 0 0 1 0 1 1 0 1 **(1)** - - - - - - - - - 0 0 1 1 1 1 0 1 0 1 **(1)**	
	Additional Guidance Student's response may not show leading zeros outside of 8bit structure of original numbers – credit for appropriate 8bit structure if zeros omitted.	**(4)**

Question Number	Answer	Mark
2c	Award **one** mark for identification of a validation check and **one** mark for an appropriate linked expansion, up to a maximum of **two** marks. • Range check (1) to ensure that the length of the name is between the minimum and maximum length permitted (1) • Presence check (1) to ensure that the name variable is not left blank (1) • Constraints check (1) to check that the name only contains permitted characters / does not contain offensive words (1)	**(2)**

Question Number	Answer	Mark
2d	Award **one** mark for use of an appropriate function/method and **one** mark for correctly passing the data item/index. • inventory.append("Key") inventory.append **(1)** ("Key") **(1)** **Additional Guidance** Award one mark for an inefficient solution (e.g. more than a single line) that would create the correct outcomes such as: position = len(inventory)-1 inventory.insert(position, "Key")	**(2)**

Question Number	Answer	Mark
2e	Award **one** mark for correct assignment to a variable and **one** mark for correct use of indexing to get the string. last_found = inventory[-1] last_found = **(1)** inventory[-1] **(1)**	**(2)**

Question number	Indicative content

2f	Possible solution:
	
	``
	currScore = getCurrScore( ) #gets the player's current score and returns it as an integer
	
	highScores = getHighScores( ) #gets the current high scores and returns them in a data structure
	
	def check_high_score (currScore, highScores):
	
	    lowest = min(highScores)
	
	    locationMin = highScores.index(lowest)
	
	    if currScore > lowest:
	        print("Well done! You have achieved a high score")
	
	        highScores.pop(locationMin)
	        highScores.append(currScore)
	
	    else:
	        print("Sorry you have not achieved a high score this time")
	
	    highScores.sort(reverse = True)
	
	    rankCount = 1
	
	    for i in highScores:
	        print("{}: {}".format(rankCount, i))
	        rankCount = rankCount + 1
	
	check_high_score(currScore, highScores)
	``
	
	Marking Guidance
	
	Possible solution is indicative and not the only way that the problem could be solved.
	
	Credit any solution that would result in outcomes that meet the requirements listed in the information booklet.
	
	Marking should focus on the appropriateness of logic, function selection, order of processes, correctly passing arguments etc in order to meet the given requirements.
	
	Minor errors in syntax and formatting e.g. missing commas, minor spelling errors in function and variable names, inconsistent indentation should be ignored as long as meaning is clear.

Mark scheme (award up to 9 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes.		
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-3	• Demonstrates basic application of logic, processes and programming constructs that are partially relevant to the given problem (AO2) • Produces a solution that partially meets the given requirements (AO2) • Demonstrates a basic analysis of the situation by superficially decomposing problem into relevant component parts (AO3)
Level 2	4-6	• Demonstrates good application of logic, processes and programming constructs that are relevant to the given problem (AO2) • Produces a solution that mostly meets the given requirements (AO2) • Demonstrates a good analysis of the situation by decomposing problem into relevant component parts (AO3)
Level 3	7-9	• Demonstrates comprehensive application of logic, processes and programming constructs that are consistently relevant to the given problem (AO2) • Produces a solution that effectively meets the given requirements (AO2) • Demonstrates a thorough analysis of the situation by comprehensively decomposing problem into relevant component parts (AO3)

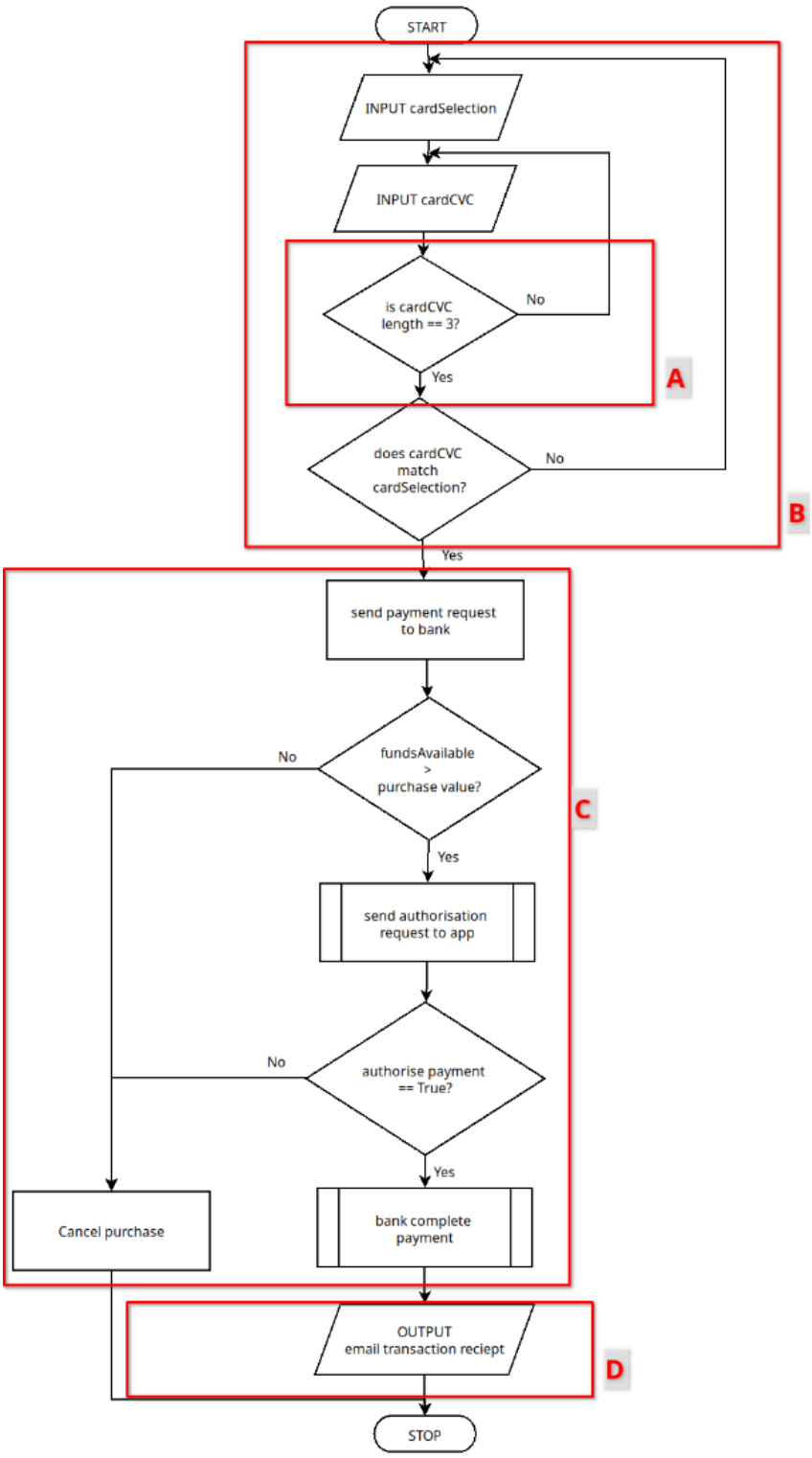
Total Marks Question 2 = 20

Question Number	Answer	Mark
3a	Award **one** mark for any of the following up to a maximum of **two** marks**:** • So that it can be used as the **index** for the data structure (1) • Data structures are indexed from 0 (not 1) (1) • The number 5 would be the index of the 6th item in the list (1) Accept any other appropriate responses.	**(2)**

Question Number	Answer	Mark
3b	Award **one** mark for identification of a problem and one mark for an appropriate linked expansion, up to a maximum of **two** marks. • The size of the list has changed (1) but the range of the random number code is fixed (1) • The random number generated may be out of range (1) because the list now has fewer items (1) Accept any other appropriate responses.	**(2)**

Question Number	Answer	Mark
3c	Award **one** mark for identification of one way to prevent issues in the code and one mark for an appropriate linked expansion, up to a maximum of **two** marks. • Change the range on line 8 (1) so that the upper value is based on the length of the list (1) **Accept any other appropriate response**	**(2)**

Question Number	Answer	Mark
3d	Award **one** mark for each identification of an improvement to the code and one mark for an appropriate linked expansion of each improvement, up to a maximum of **four** marks. • Use more consistent case / naming conventions (1) for multi-word variable names (1) • Add comments/annotation (1) to explain the logic of the code (1) • Use clearer/more meaningful variable names (1) for example random_selection_index (instead of just random_selection (1)	**(4)**

Question number	Indicative content
3e	Possible solution: 

Pearson Level 3 Alternative Academic Qualification BTEC National in Computing (Certificate/Extended Certificate)
Sample Assessment Materials – Unit 1: Programming Fundamentals – Issue 2 – September 2025 © Pearson Education Limited 2025

	Award **one** mark for each of: • Correct use of flowchart symbols and conventions throughout (1) • User input for selected card and CVC code (1) • Correct logic and outcomes to validate length of CVC code (1) (Section A) • Correct logic and outcomes for checking CVC and Card match (1) (Section B) • Correct logic and outcomes for checking balance and authorising or declining payment (1) (Section C) • Transaction receipt is output/sent to email (1) (Section D) **Additional Guidance** Possible solution is indicative and not the only way that the problem could be solved. Credit any solution that would result in outcomes that meet the requirements listed in the information booklet. Marking should focus on the appropriateness of logic, order of processes, etc in order to meet the given requirements.	**(6)**

Question Number	Indicative content
3f	An assessment of the extent to which the use of open-source software will meet Zawadi's requirements. Responses will be credited according to the student's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Responses may cover some or all indicative content, but students should be rewarded for other relevant responses. **Content areas that may be considered** • Features o Possible features that may be included in the program such as the gift bag creation and payment options. What parts of these are likely to be available? o Payment systems are likely to use APIs rather than opensource code, which may present difficulties but could improve security o The tasks are quite niche (e.g. creating a list of party favours for the bag) so being able to use an existing offthe-shelf solution is unlikely. Open-source would allow the developer to find existing code that is reasonably close and modify it to suit the specific needs of this program. • Compatibility o Would need to consider the platform and code that they are deploying the final program in o The code they find for different aspects may be in different languages, which may not be compatible, which would require some refactoring. • Costs o Using open-source code can be quite cost-effective as it is often provided at little to no cost for the base code. o Because the code would likely need to be adapted, a developer would need to be employed, however because the code is not being written from scratch, the amount of time it will take, and therefore overall cost, is reduced.

	• Licensing issues
	  ○ Open-source code is often released under different licenses. If you are unfamiliar with/new to the use of open-source, what you can and can't do may be confusing at first.
	• Legal and contractual issues
	  ○ Using the code in a way that is not permitted by the release license could result in legal issues for Zawadi
	  ○ If there is an issue with the code that impacts his customers and business, it may be difficult for Zawadi to seek legal help as it may be difficult to apportion blame. For example if there is a security issue with the code, who is to blame, the programmer who originally wrote the base code or the programmer that made use of that code and didn't spot/fix the issue?
	
	Possible application to the scenario/assessment points
	Robust and able to handle a range of user errors
	• The source code may have been seen by a much wider variety of users/programmers so it may have been tested more widely.
	• Because the source code is visible, it can be easier to spot potential issues.
	
	Secure and protect user data
	• Visible source code means that any malicious code can be seen and dealt with.
	• However, because code is visible, it is possible for cyber criminals to identify weaknesses more easily.
	• Some open-source projects are very small and the programmers only work on it in their spare time, which means it might take longer to respond to issues/vulnerabilities in the code.
	
	Easily maintainable
	• The code can be seen and edited without the need to wait for the original developers to update it.
	• The community of users often fork/build upon the code, adding extra features and fixing issues which could benefit Zawadi.

Mark scheme (award up to 9 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes.		
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-3	• Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2) • Demonstrates a basic analysis of the situation by superficially breaking down the different aspects into component parts (AO3) • Demonstrates a basic assessment which partially considers different factors/events and their relevance to the given requirements (AO4)
Level 2	4-6	• Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2) • Demonstrates a good analysis of the situation by breaking down the different aspects into component parts (AO3) • Demonstrates a good assessment which considers different factors/events and their relevance to the given requirements (AO4)
Level 3	7-9	• Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2) • Demonstrates a thorough analysis of the situation by comprehensively breaking down the different aspects into their component parts (AO3) • Demonstrates a thorough assessment which comprehensively considers different factors/ events and their relevance to the given requirements (AO4)

Total Marks Question 3 = 25

Question Number	Answer	Mark
4a	Award **one** mark for each identification of a way to make sure content is perceivable and one mark for an appropriate linked expansion, up to a maximum of **four** marks. Provide text alternatives (alt text) (1) so that content can be changed into other forms (e.g. braille, speech) (1) Provide closed captions/transcripts (1) for audio/video content (1) Provide alternative layout/font/colour options (adaptability) (1) so that the interface can be adjusted to suit individual needs (1) Present information in a meaningful sequence (1) so that screen reader software is effectively supported (1) **Additional guidance** Accept other appropriate methods/examples as covered by Web Content Accessibility Guidelines.	**(4)**

Question Number	Answer	Mark
4b	Award **one** mark for identification of a secure coding practice and **one** mark for an appropriate linked expansion, up to a maximum of **two** marks. • Cleanse/validate user input (1) to protect against injection attacks (1) • Ensure any external dependencies/APIs /third-party code (1) are checked for security/regularly maintained (1) • Isolate data/credentials (1) from the core code base (1) • Clearly define a block of codes responsibility (1) so it can be audited / potential issues can be traced (1) • Maintain a consistent coding style (1) so that other members of the team can audit the code more easily (1) **Additional guidance** Accept other appropriate coding practices that ensure code is secure. Responses must be about how **code** is implemented and not general security concerns such as using usernames and passwords.	**(2)**

Question Number	Answer	Mark
4c	Award **one** mark for each appropriate point in a linked description up to a maximum of four marks. • Use the test data 4, 5, 6, 16, 17, 18 (1) • to test the upper and lower boundaries (1) • check that outcome meets the expected outcome • test data 5 to 17 (inclusive) should assign the string 'Junior' to the variable (1) • any other test data should branch to another condition (1)	**(4)**

Question Number	Answer	Mark
4d	Award **one** mark for identification of why AND is used and **one** mark for an appropriate linked expansion, and **one** mark for a further expansion, up to a maximum of **three** marks. To ensure that the value is **between** the two boundaries (1) OR would mean that ANY numerical value would be accepted (1) because it would always be either Less than 18 OR greater than 4 (1)	**(3)**

Question Number	Indicative content Mark
4e	Responses will be credited according to the student's demonstration of knowledge and understanding of the material, using the indicative content and level descriptors below. The indicative content that follows is not prescriptive. Responses may cover some or all indicative content, but students should be rewarded for other relevant responses. **Strengths** • The code is relatively easy to use, as it uses a menu/prompt driven interaction. • It prompts all the required information form the user. • The match/case structure makes the code more efficient and easier to debug than an if/elif/else structure for this many weight options. • The code converts text input into integers. • Outputs are mostly clear and informative. **Weaknesses** • When asking for Weight Category it could be clearer if they want the number option of the name. • The weights tuple is in a different order to the menu, so would return the wrong weight category, which in turn would produce incorrect results for weight calculation. • The discount calculation uses > 3 rather than >=3 so would not always provide the correct discount. • The code does not check/handle erroneous data – for example, typing a letter in for the menu choice could not be cast as an integer so would crash the program. • The total output only provides total including discount and not with and without. **Conclusion** The student should reach a judgment based on the points made as to how far the program meets the requirements. Students should decide, and provide a rationale for, whether they think the strengths outweigh the weaknesses, and how seriously the weaknesses impact the quality and effectiveness of the program, in relation to meeting the given requirements.

Mark scheme (award up to 12 marks) refer to the guidance on the cover of this document for how to apply levels-based mark schemes.

AO2 descriptors carry double weighting.

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-4	• Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2) • Demonstrates a basic analysis by superficially breaking down the different aspects into component parts with errors/inconsistency (AO3) • Demonstrates a basic evaluation which partially considers different factors/events and competing points in relation to the given requirements, leading to an unsupported conclusion (AO4)
Level 2	5-8	• Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2) • Demonstrates a good analysis by breaking down the different aspects into component parts (AO3) • Demonstrates a good evaluation which considers different factors/events and competing points in relation to the given requirements, leading to a partially supported conclusion (AO4)
Level 3	9-12	• Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2) • Demonstrates a thorough analysis by comprehensively breaking down the different aspects into their component parts (AO3) • Demonstrates a thorough evaluation which comprehensively considers different factors/events and competing points in relation to the given requirements, leading to a well-supported conclusion (AO4)

Total Marks Question 4 = 25

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